Later 1999-2000

NESHAP INSPECTIONS TRAINING MANUAL
DRAFT

SECTION 1--REGULATORY REQUIREMENTS

Section 2 of the training module (Compliance Determination) identifies the process to be followed in identifying applicable laws, regulations, standards, and guides (the "Regulatory Baseline") required to conduct a consistent regulatory compliance review effort (i.e., the how of setting up and conducting the mechanics of the inspection).

This section supplies the component for a successful inspection, i.e., actual hands-on, technical insight into what to look for, how to look for it, and how to know when you found it.

All the requirements in Subparts A and H can be classified into three general topics for evaluating on-site stacks and fugitive emission points for compliance with the NESHAP: (1) emissions monitoring and test procedures, (2) estimated releases and reporting, and (3) quality assurance practices. Together, these three topics comprise a "system," each part of which is important to a proper compliance determination. A problem in one part of the system will likely invalidate the results in other parts.

1.1 Inspecting Facility

1.1.1 The Standard

Ultimately, the Inspection Team has to make a determination whether or not the facility is in compliance with the Agency's standard. Subpart H's dose standard that facilities must meet is stated in paragraph 40 CFR 61.92. The standard is 10 millirem EDE in any year to a member of the public. Radiation dose is calculated as "effective dose equivalent" (EDE).

Compliance is generally determined by calculating the highest dose, to any member of the public, at any point where there is a residence, school or business. Calculations must be performed using an approved model.

For each of the three elements of the system identified above, the following identify specific applicable requirements and discuss how to inspect for compliance issues.

Emission Monitoring and Test Procedures

EMISSION MEASUREMENTS

Continuous radionuclide emission measurements must be made at release points with the potential to discharge radionuclides that would cause an effective dose equivalent in excess of more than 0.1 mrem/year (40 CFR 61.93).

- The facility must measure all radionuclides which could contribute greater than 10% of the dose from that release point.
- Other release points must be measured periodically to ensure emissions are below these levels
- Evaluation of potential emissions must be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal.
- Periodic measurements, in place of continuous, require prior approval.

MONITOR, COLLECT, MEASURE

Sampling site selection in the exhaust stack or duct is covered in 40 CFR Part 60, Appendix A, Method 1. Sample collection and measurement is covered in Appendix B, Method 114, "Test Methods for Measuring Radionuclide emissions from Stationary Sources," which provides requirements for:

- Stack monitoring and sample collection methods appropriate for radionuclides
- Radiochemical methods used in determining the amounts of radionuclides collected by stack sampling; and
- Quality assurance methods which are conducted in conjunction with thes measurements.

For release points with a potential EDE $\geq$ 0.1 mrem/yr, the effluent must be monitored continuously, with an in-line detector, or sampled continuously, followed by lab analysis. In some cases, periodic sampling is adequate, but prior approval is required.

Some additional points:

- Continuous monitoring or sampling should be conducted following the guidance in ANSI N 13.1 - 1969 "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities" or (if constructed or modified after 1999) ANSI N13.1-1999 "Sampling and Monitoring Releases of Airborne Radioactive Substances From the Stacks and Ducts of Nuclear Facilities."

- Approval for periodic sampling may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.

- 40 CFR 60 Appendix A Method 1, "Sample and Velocity Traverses for Stationary Sources," provides requirements for the selection of sites to be used when performing sampling or velocity measurements of ducts, stacks, and vents. Adherence to the procedures delineated in Method 1 will ensure that representative measurements of radionuclide emissions and/or total volumetric flow rate are made.

EFFLUENT FLOW RATE MEASUREMENTS

In any stack sampling or monitoring system, effluent flow rate must be measured. This information is necessary to calculate total radionuclide release. If the flow in the stack is fairly constant, and the dose is less than 1% of the standard, then periodic flow measurements are adequate. If the flow is variable, continuous or frequent measurements are necessary.

General methods for flow rate measurements are given in Part 60, Appendix A, Method 2. For small vents and pipes, refer to Part 60, Appendix A, Method 2A.

ALTERNATIVE PROCEDURES TO MEASURE EFFLUENT FLOW RATE

If it is impractical to comply with the flow rate measurement requirements, a facility may apply for approval for an alternative procedure.

It is up to the facility to show that the alternative procedure will not underestimate

emissions significantly. The facility should show that the proposed measurement point has been carefully selected. If the proposed alternative method is not approve, then the use of standard methods would be required.

COMPUTER MODELS FOR COMPLIANCE

Radiation dose due to emissions must be calculated and compared to the dose standard. Only approved calculational models may be used. These models are:

- CAP-88
- CAP88-PC
- AIRDOS-PC
- COMPLY

CAP-88, CAP88-PC or AIRDOS-PC may be used to calculate effective dose equivalent to any member of the public.

The COMPLY model may be used to calculate effective dose equivalent if the maximally exposed individual lives within 3 kilometers of all sources of emissions in the facility.

Emissions determined in Ci/yr from proper sampling procedures are used as inputs for these models. Other input variables include stack height, distance to receptor, etc. Each of these programs will calculate the EDE and print a compliance report.

For further information, consult User's Guide for CAP88-PC, EPA 402-B-92-001, March 1992, User's Guide for the COMPLY Code, EPA 520/1-89-003, October 1989, and User's Guide for AIRDOS-PC EPA 520/6-89-035, December 1989.

COMPLIANCE - ENVIRONMENTAL MEASUREMENTS

Instead of air dispersion computer models, a facility may use environmental measurements of radionuclide concentrations in the air at critical receptor sites to show compliance. However, prior approval is required.

A facility using environmental measurements must continually sample air at critical receptor locations. Radionuclides that are major contributors to dose (EDE) must be collected and measured. Radionuclides that cause an EDE of 1 mrem/yr should be distinguishable from background. Facilities must use Table 2, Appendix E to determine compliance with the standard.

OTHER REQUIREMENTS

Annual reports are required, and are due by June 30 for the previous year. If the facility fails compliance with the dose standard, then monthly reports are required until compliance is achieved.

Each facility required to measure radionuclide emissions must follow the quality assurance methods described in Part 61, Appendix B, Method 114.

1.1.2 Compliance with the Standard

The objective is to make sure that data, upon which the assessment of compliance rests in part, are valid. In the determination of validity, one must ask basic questions: are the right things being measured, are measurements being taken using techniques and equipment appropriate to the conditions? The types of emissions at issue as well as answers to these questions are discussed below.

Emissions Monitoring

Annual emissions data, reported to EPA, should be the same as that used in the facility's dose assessment. Inspectors should attempt to verify the derivation of the reported emissions data. This can be done by checking laboratory results, and calculations made to derive emissions.

During inspections, unmonitored stacks should be checked for venting of contaminated areas. This condition could result in an unmonitored release. Health physics records can help identify contaminated areas and areas of airborne contamination.

Sampling for Particulates

The most common type of emissions monitoring is particulate sampling. A stream of exhaust air is drawn off for sampling. The point of sampling should be selected so that the sample is representative of what is being released. This involves proper placement of the sampling probe and isokinetic sampling.

The sample stream is pulled through a filter, which collects the particulates. The filter type should be appropriate for the particles being emitted. Some choices are:

- Cellulose – a general-purpose filter, but not suited to alpha-emitting nuclides.
- Glass fiber - high collection efficiency, without high airflow resistance; good for high temperature applications.
- Membrane (Millipore) - good for alpha-emitting nuclides, but is fragile and has high airflow resistance.
- Synthetic fiber - special fibers tailored to specific needs and situations.

A common problem in sampling particulates is particulate loss in the sample line. Particulates will collect at bends and joints, some never making it to the collection filter. Thus, emissions will be underestimated. Inspect the sample lines for tight bends or uneven joints or situations where the filter is mounted vertically.

Finally, confirm that the filter is being properly analyzed to determine the identity and quantity of nuclides collected.

Sampling for Gases

Gases cannot usually be collected on filter media. They require direct measurement in the stack or of an extracted sample. Some exceptions are:

- Radioiodines - which can be collected on activated charcoal, silver zeolite, and other media, depending on the chemical form of the iodine.

- HTO vapor - which can be collected on silica gel.
- $^{14}CO_2$ - which can be collected in a cold trap.

Direct measurement of gases in the stack can be accomplished with an ionization chamber. An ion chamber can integrate ionization's, which is related to activity. However, it does not identify nuclides--this must be done separately.

Use of an ion chamber requires careful calibrations, and measurements of sample and stack flows.

Sampling for Tritium

Tritium is commonly seen in emissions at DOE facilities. It is often collected on silica gel. However, silica gel will collect tritiated water vapor (HTO) only. If tritium gas (HT) is present, it can be oxidized into HTO, and then collected.

Silica gel may saturate in high humidity situations resulting in under-collection of tritium. An indicator is needed to determine whether saturation has occurred. This is usually a colorant that responds to water vapor. A quick look at the silica gel column will show how far water vapor has migrated. Some facilities use a back-up column, which is analyzed for tritium.

After removal, water vapor is baked off the silica gel, condensed, collected and counted for tritium.

Single Probe Sampler

One probe is adequate for small ducts-less than 8" in diameter, or less than 0.5 square foot in cross section. Also, single probe samplers are adequate for release points with properly mixed gaseous (aerodynamic particle size less than 5 microns) effluent.

The particulate filter should be placed as close as possible to the probe. This minimizes particulate loss in the sample line. There should be no sharp elbows or fittings to trap particulates.

An ideal sampling point should be at least 8 duct diameters downstream of a flow disturbance and

2 diameters upstream of a disturbance. This is known as the "8 and 2" rule. A flow disturbance is a fan, junction or sharp elbow, contraction in the stack or visible flame.

The vacuum pump and flow meter should be downstream of the filter.

Multiple Probe (Rake) Sampler

In a large duct, multiple probes are necessary. These are normally attached to a center tube or pipe. This is referred to as a "rake." The five probe rake shown is used for a round duct, 30" to 48" in diameter, or a rectangular duct, approximately 2 ft^2 in cross section.

Each probe is designed to sample an equal annular area of the duct. In a five probe rake, for example, each probe should sample an area of one-fifth the total cross-sectional area.

As with a small duct, the particulate filter should be placed as close as possible to the probe, to minimize particulate loss in the sample line. Sharp bends and fittings should be avoided.

The selection of the ideal sampling point should follow the "8 and 2" rule. In a large duct, it is prudent to take a velocity profile to ensure that a representative sample will be taken.

ANSI N13.1 - 1969

The American National Standards Institute's guide for sampling airborne radioactive material is known as ANSI N13.1. This standard is referenced in the NESHAP's rule. It is an important reference document for Subpart H inspectors.

The document contains guidance on:

- particulate collection media, including measured efficiencies,
- sampling point placement in ducts and stacks,
- sampling probe design, and
- related factors

Much of the information on sampling presented in this course was taken from ANSI N13.1. A more detailed course on sampling, also drawing from the standard, is available.

Isokinetic Sampling

An isokinetic condition exists in the sampling probe when the air velocity in the probe is the same as the air velocity in the stack at the point of sampling.

If the velocity in the probe is too low, the condition is subisokinetic. Under this condition, the larger particles will impact into the probe, leading to an overestimate of the sample concentration.

If the velocity in the probe is too high, the condition is super-isokinetic. Under this condition, a greater fraction of smaller, rather than larger particles will be drawn into the probe. This leads to an underestimation of sample concentration.

The procedure to determine whether sampling is isokinetic is as follows:

- Review stack flow measurements - determine exhaust velocity at sample point.
- Review probe inside diameter and sample flow rate - determine air velocity in probe.
- Ratio of probe to stack velocities should be between 0.7 and 1.0.

Additional points:

- Stack exhaust velocities should be measured at least annually.
- Sample flow rates should be measured weekly.
- Probe inside diameter may not be known for very old systems.
- At a ratio of 2.0, particulates are underestimated by from 10 to 50%.

ANSI N13.1 - 1999

ANSI N13.1-1999 allows for single point sampling of stack and ducts as a means of obtaining a representative sample. The use of single point sampling allows for much greater sample collection efficiency due to decreases in sample loss in the nozzle.

Single point sampling requires that the sampling site be well mixed and well characterized. This requires extensive testing prior to selecting a sampling location to ensure the site provides an even flow distribution, and that particulates and gases are well mixed.

ANSI N13.1-1999 "Sampling and Monitoring Releases of Airborne Radioactive Substances From the Stack and Ducts of Nuclear Facilities" provides guidance on the sampling of stack and ducts, and is a performance based standard rather than the prescriptive 1969 version.

The guidance and criteria of N13.1-1999 is covered in seven clauses.

Clause 1 identifies the scope and application of this standard.

Clause 2 identifies other applicable EPA tests methods and applicable national standards.

Clause 3 contains the glossary.

Clause 4 covers the objectives and approaches for sampling programs.

Clause 5 identifies the requirements for selecting sampling locations.

Clause 6 identifies the requirements for designing the sampling system components.

Clause 7 identifies the requirements of an acceptable quality assurance program specific for air sampling.

There is also technical guidance and information provided in eight annexes. They cover the following topics; techniques for measurement of flowrate through a stack or duct; modeling of particle losses in transport systems; special considerations for the extraction, transport, and sampling of radioiodine; criteria for the selection of filters for collecting airborne radioactive particles; statistical basis of evaluating effluent sampling errors and uncertainty; when to

conduct sampling system performance verification and how this may be accomplished; transuranic aerosol particulate characteristics and the implications for extractive sampling in nuclear facility effluents; tritium sampling and detection.

The goal of N13.1-1999 is to provide a method of collecting a representative sample from a stack or duct to determine total emissions from that source. To assure a representative sample is collected the standard established some required sampling system performance criteria. That criteria is listed below. The documentation demonstrating compliance with these criteria should be contained in a technical basis document for the sampling system.

- Total transport of 10 um AD particles and vaporous contaminants shall be $>50\%$ from the free stream to the collector/analyzer.

- Sampler nozzle inlet shall have a transmission ratio between 80% and 130% for 10 um AD particles.

- Sampler nozzle shall have an aspiration ratio that does not exceed 150% for 10um AD particles.

- Characteristics of a suitable sampling location are: a)coefficients of variation over the central 2/3 area of the cross section within $\pm$ 20% for 10 um AD particles, gaseous tracer, and gas velocity; b) flow angle $<20^{\circ}$ relative to the long axis of the stack and nozzle inlet; c) the tracer gas concentration shall not vary from the mean $>30\%$ at any point on a 40 CFR 60 Appendix A Method 1 velocity mapping grid.

- Effluent flowrate continuous measurement required if flow variation is $>\pm 20\%$ in a year.

- Effluent and sample flowrate shall be measured within $\pm 10\%$.

- Continuous sample flowrate measurement and control required if flow varies $>\pm 20\%$ during a sample interval. Flow control shall be within $\pm 15\%$.

- PIC 1 continuous measurement of effluent flowrate and continuous measurement and control of sample flowrate.

- PIC 2 Continuous flowrate measurement unless flowrate variation is less than $\pm 20\%$ during a year.

- Periodic inspections of nozzles, transport lines, sample, and effluent flowmeters shall be conducted.

- Periodic calibrations of effluent and sample flowmeters, CAMs, and sample analysis instrumentation shall be conducted.

Fugitive Emissions

Fugitive emissions are emissions from sources other than stacks and vents, such as from contaminated soil, ponds, or breathing buildings. DOE may have a slightly different definition--this should be defined early in the inspection.

Fugitive emissions are covered by NESHAP's, and should be treated like other emissions. Dose to the nearest receptor must be calculated and added to dose from stacks and vents.

Monitoring Information Needed for Compliance

In Section 2 you will learn that the objective of conducting an inspection is to ***create a credible and traceable body of information detailed enough to support a decision on compliance with the NESHAP's.*** Because this should not be a hit or miss process, a list of standard questions have been developed to help ferret out the information required. These questions have been produced in checklist fashion in Appendix B. The Inspection Team is encouraged to go beyond these questions as the situation and their judgement dictates.

The material provided below is organized into three types of monitoring: stacks; vents and hoods;

and environmental. For each release point the facility should:

- Describe the material handled and operations performed.
- Provide a schematic of the stack(s) and flow measurement monitoring locations.
- Provide stack physical parameters.
- Describe the potential for fugitive emissions.
- Identify the applicable QA/QC program/procedures.

For stack monitoring:

- Describe the stack monitoring/sampling system and procedure for flow and radionuclide measurements, including frequency of measurement.
- Is the level of monitoring consistent with estimated PEDE category, yes or no?
- Provide the airborne effluent (stack) monitoring/sampling data.
- Describe the effluent control system.
- Provide records to justify decisions and assumptions affecting the performance of the stack monitoring system.
- Identify the applicable QA/QC program/procedures, including those for locating, maintaining, and calibrating radionuclide monitors.

For area, vent, and hood monitoring (if not routed to stack):

- Describe in-plant area monitoring/sampling data, if any.
- Describe hood monitoring sampling data, if any.
- Describe effluent control system efficiencies.
- Describe calculations used to demonstrate compliance.

- Identify the applicable QA/QC program/procedures.

For environmental monitoring:

- If environmental measurements are made, describe the program.
- Provide evidence that prior EPA approval was obtained.
- Provide airborne radionuclide monitoring/sampling data.
- Describe location of sampling/monitoring points.
- Identify the applicable QA/QC program/procedures.

Concentration Levels for Environmental Compliance

Exhibit 1-2 shows only a few of the over 400 radionuclides in Table 2, Appendix E, of the rule. These concentrations correspond to an annual dose of 10 mrem/yr[1]. Thus, to meet the required detection limit of 1 mrem/yr, the facility should be able to detect these nuclides at about 10% of the listed concentrations.

When multiple radionuclides are released, use the sum of fractions rule. That rule states, "The sum of the concentration of each radionuclide, divided by its limiting concentration from Table 2, should be less than unity." (61.93(b)(5))

Exhibit 1-2. Concentration Levels for Environmental Compliance

Selected Radionuclides	Concentration Ci/m^3
C-14	1.0E-11
Co-60	1.7E-14
Zn-65	9.1E-14
Kr-85	1.0E-6
Mo-99	1.4E-11
I-125	1.2E-13
I-131	2.1E-13
Cs-137	1.9E-14

1.1.3 Estimated Releases and Reporting

The purpose of this section is to provide an understanding of the calculational models used to calculate dose to the public from airborne emissions of radioactive materials. This section will review the dose models approved for use with radionuclide NESHAP's; the proper use of those models, including inputs; and alternatives to using these models.

Dose Models

EPA has developed and/or approved several calculational models for use with radionuclide NESHAPs. These models use as input emissions, facility and site area data. They calculate the annual dose to off-site receptors. These models are: CAP-88, CAP88-PC, AIRDOS-PC, and COMPLY.

Strengths and limitations of these models are discussed in Section 2.

DOE facilities generally use CAP-88. CAP-88 is available for mainframe and PC. Access the EPA

Web page for copies of this program, along with a user guide and frequently asked questions (www.epa.gov/radiation/assessment/software.html).

During an inspection, it is common to run one or more of these models. The facility will often provide a PC, when requested. If not, a portable laptop can be used.

Some large DOE labs have developed site-specific models to assess off-site dose. These cannot be used for NESHAP's compliance without prior EPA approval. This approval cannot usually be granted during an inspection.

The models will accept up to 6 stacks, so large facilities will have to make adjustments. They can either group adjacent stacks into 6 groups, or they can make multiple runs.

Also, models are generally not able to find the maximum receptor, when there are multiple stacks. This is because the maximum receptor may not be the same for each stack. In this case, multiple runs and hand calculations are required.

Meteorological data are required as input to nearly all the models. This data can be obtained from airports near all DOE sites. However, site-specific data are preferred, and many DOE sites have their own meteorological towers.

Area sources, such as contaminated surface soil, cannot be modeled by COMPLY alone. Use the AREA program to calculate a multiplier for input to COMPLY if radionuclides are released from an area source. Area sources can be modeled, however, by CAP-88 and AIRDOS-PC.

Questions which can be used to help develop the technical record include:

- Which code was used? The facility can not use the COMPLY and associates procedures if the distance to the closest resident is greater than 3000 meters.
- If the facility's releases are measured in terms of gross activity, how was the release quantity of each nuclide determined?
- How did the facility treat multiple release points?
- What is the source of the facility's meteorological data?

- Did the facility change any of the default pathway parameters in CAP-88 or CAP88-PC?
- How did the facility determine the distances from the release point to the closest resident in each sector? How did the facility determine the distances to the nearest farms raising produce, milk and meat?
- Was CAP-88, CAP88-PC or AIRDOS-PC used to estimate the dose to a resident who is closer than 100 meters to the release point?
- Is the terrain complex?
- Describe distances and directions to nearest residences, offices, schools, and farms.
- Provide site meteorological data (wind rose, wind speeds), if any.
- Identify the applicable QA/QC program/procedures.

Source Terms

Generally, inputs for source term determination are derived directly from stack or vent/hood monitoring data. However, the rule also allows a facility to use environmental measurements to demonstrate compliance. For the latter, prior approval is required, and stack monitoring must continue even if approval is obtained. Additionally, the analytical (i.e., laboratory) processes used to interpret the data obtained is also an important line of questioning.

Stack/Vent/Hood Monitoring

Key information required concerning radioactive source terms includes:

- Provide the quantity and forms of each radionuclide handled in Curies (excluding sealed sources), with maximums and daily averages.
- Describe, provide, and/or reference the procedure for assigning radioactive material to i, ii, iii physical states (Appendix D 2(b)).
- Describe any adjustments and all assumptions applied to effluents as a result of effluent controls (Appendix D, Table 1).

- Provide records to justify source term determinations.
- Identify the applicable QA/QC program/procedures.

Environmental Monitoring

These measurements would involve continuous air sampling at critical receptor sites. Radionuclides that are major contributors to effective dose equivalent must be collected and measured. Annual average concentrations of these nuclides are then compared to the concentrations in Table 2, Appendix E of the rule, to determine compliance. When more than one nuclide is involved, use the sum of fractions method to determine compliance.

The measurement of each important radionuclide concentration must be such that the detection limit corresponds to a dose of 1 mrem/yr above background.

In addition, the facility must have a quality assurance program for environmental measurements that complies with Appendix B, Method 114, of the rule.

The application for approval of an environmental measurements compliance program must demonstrate all of the above requirements.

If a facility has received approval for an environmental measurements compliance program, then this program would be reviewed during an inspection. Otherwise, environmental monitoring would generally not be reviewed.

Analytical Processes

The following information should be obtained from those responsible for the laboratory analysis of effluent data.

- Provide information and data sufficient to allow analysis of the results of the environmental monitoring system, including all assumptions.

- Provide information and data sufficient to allow analysis of the results of the particulate sampling programs, including all assumptions.

- Provide information and data sufficient to allow analysis of the results of all relevant laboratory work, including all assumptions.

1.1.4 Quality Assurance Practices

This section provides a review of the reporting, records and specific quality assurance activities to be covered in an inspection of DOE facilities. In a broad sense, all three items are part of a quality assurance program. The basic core concepts of a quality assurance program are:

- identification of the equipment and activities important to public and facility safety,

- identification of requirements and specifications (design, construction, operation, maintenance, etc.) important to the proper functioning of equipment and activities important to public and facility safety,

- assurance that equipment and activities important to public and facility safety are attended to by persons qualified (by experience or education) to do so,

- compilation of a record sufficiently clear for an informed lay person to be able to recreate the decision process affecting equipment and activities important to public and facility safety.

Reporting Requirements

An annual report to EPA is due on or before June 30th, covering the previous calendar year. The purpose of the report is to allow both EPA and DOE to assure themselves that the dose standard is being met. This report must include the following (40 CFR 61.94):

- Monitoring results and dose calculations,

- List of radioactive materials used at the facility,

- Description of handling and processing that the radioactive materials undergo at the facility,

- List of stacks or vents or other points where radioactive materials are released to the atmosphere,
- Description of the effluent controls used on each stack, vent, or other release point and an estimate of the efficiency of each control device,
- Distance from release points to nearest residence, school, business or office and nearest farms, producing vegetables, milk, and meat,
- Values for all input parameters for computer models,
- Description of all user-supplied construction/modification completed in calendar year, and
- Statement certifying the report's accuracy and completeness, and signed and dated by a corporate official in charge.

If the standard is not met, then monthly reports to EPA are required. These are to include:

- Same information as annual report, and
- Changes to bring facility into compliance.

Monthly reports will continue until EPA determines they are no longer necessary.

All reports should be reviewed prior to an inspection, and attempts made to verify the reported data during the inspection.

Recordkeeping

To allow independent verification of compliance, the facility must document sources of all information used to demonstrate compliance. Such information typically includes, as a minimum, results of measurements, calculations and/or analytical methods used, and the procedure used to determine EDE.

Records must be kept on site for at least five years, and be made available for inspection upon request. Only rarely would these records be classified. However, if some records are classified,

EPA can arrange for a Q-cleared inspector to be on the inspection team.

Quality Assurance

Quality assurance is an essential element of NESHAPs compliance. As a minimum, the NESHAP requires the permit holder take the following actions:

- Evaluate measurement data against preset criteria. Preset criteria include replicates, spikes, split samples, blanks and control charts.
- Establish a sample tracking system. The sample tracking system should maintain the integrity of the samples during collection, storage and analysis. The system should also provide for a "chain of custody" record to preclude tampering.
- Perform periodic internal and external audits. Audits should be performed according to written procedures and by personnel who are not responsible for performing the operations being audited.
- Establish a corrective action program. When problems are identified, the corrective action program shall identify what corrective actions will be taken and when, and who will be responsible.
- Prepare periodic reports on quality.
- Prepare and carry out a quality assurance project plan.

The QA program should also document an organizational structure (to ensure responsibility and independence for appropriate activities); administrative controls (to ensure prompt response when emission measurements indicate unexpectedly high emissions); sample collection and analysis procedures (to ensure that activities important to compliance with the NESHAP are conducted by controlled, management-approved instructions); objectives of QA--including precision, accuracy and completeness of emission measurement data; and a description of the procedures used to assess these parameters.

A successful program, however, is more than the sum of its requirements and procedures. A Quality Assurance program will not be successful unless the organization's attitude toward QA is a healthy one, i.e., it recognizes the importance of the QA role. Management's commitment to

QA can be gauged by assessing the quality of the QA staff, determining whether the QA budget is commensurate with its responsibilities, and determining whether management is knowledgeable about and involved with QA activities or whether it views QA as the QA Department's job.

1.2 Reviewing Permit Applications

Application to Construct or Modify

The requirements for obtaining approval from the Agency for constructing a new source or modifying an existing source are contained either in the general provisions of 40 CFR 61 or in the specific NESHAPs promulgated for the various source categories. For the DOE, paragraph 61.96 of Subpart H is applicable.

Application for approval or notification of startup does not need to be filed for modification/construction within an existing facility if the increase in the EDE is less than 1% of the standard. When estimating the new source term, the facility is to use the procedure and guidance given in Part 61, Appendix D. However, to qualify the facility must be in compliance as established by the previous annual report.

Conditions for approval are subject to Part 61.08.

Upon receipt of an application, the Agency should conduct a "completeness review," i.e., determine whether or not the application provides the information and analyses required by the applicable requirements. If the results of the review identify missing information, a letter detailing the missing information should be sent by the Agency to the applicant and noting that additional information is needed before action on the application can be taken. Note that a technical review has not yet been performed.

Upon the receipt of a complete or substantially complete application, an "acceptance review" should commence. A multi-disciplinary team is required. The acceptance review provides an independent technical assessment of the supporting data and calculations, and findings.

Exemptions

All DOE facilities are exempt from the source reporting requirements established in Paragraph 61.10 of Subpart A.